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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,329	04/30/2002	Frits Kornelis Feenstra	310.1028	7862
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MUSERLIAN, LUCAS AND MERCANTI, LLP 475 PARK AVENUE SOUTH NEW YORK, NY 10016			EXAMINER LOPEZ, CARLOS N	
			ART UNIT	PAPER NUMBER

1731

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/069,329

Applicant(s)

FEENSTRA, FRITS KORNELIS

Examiner

Carlos Lopez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

***Response to Amendment***

The amendment filed on 6/22/04 has been entered and obviates the objection to the specification and the rejections made under 35 USC 112 1<sup>st</sup> and 2<sup>nd</sup> paragraphs.

Applicant's arguments see page 12 lines 20ff, filed on 6/22/04, with respect to the rejection of claims 1,4-5 and 20 over Bredt et al have been fully considered and are persuasive. The rejection of claims 1,4-5 and 20 over Bredt has been withdrawn.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-4, 6, 9, 11, and 20-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Brodtkin et al (US 6,322,728). Brodtkin et al discloses the production of dental articles by a three-dimensional printing method (Col. 4, lines 12ff, Col. 5, lines 20ff, Col. 5, lines 40ff, Example 2 and Abstract).

Brodtkin notes that after the layers have been deposited to achieve the desired shaped configuration it may be desirable that the form and configuration be heated or cured at a suitable selected temperature to further promote binding of the powder particles (Col 4, lines 4ff). It is this selection of temperature to further promote binding of the powder particles layered by the three-dimensional printing method that is deemed as being the sintering step since the binding of the powders by

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heating would form a coherent mass meeting the definition of the term "sintering"<sup>1</sup>.

As for the claimed infiltration step and the use of binder, applicant is referred to

Example 2.

As for claim 22-23, applicant is referred to Col. 5, lines 47ff and Col. 7, lines 47ff.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6,9-15,17,19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brodtkin et al. (6,322,728) in view of Sachs et al. (5,204,055).

Brodtkin et al. discloses the production of articles such as dental articles by a method, which utilizes three-dimensional printing. The process disclosed by Brodtkin et al. includes the steps of depositing powder layers, spraying binder onto select portion of the powder layers to build up a dental element, and sintering the obtained element.

Brodtkin et al. does not disclose applying the powder layer with a doctor blade, utilizing layers with different compositions and thus different colors.

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<sup>1</sup> **sin-tered, sin-ter-ing, sin-ters** verb, transitive

To cause (metallic powder, for example) to form a coherent mass by heating without melting.

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Sachs et al. discloses applying the powder layer with a doctor blade (e.g. Figure 2A. and col. 5, line 19) and utilizing layers with different compositions (e.g. Col. 11, lines 17-18 and Col.8, lines 42-43).

It would have been obvious to one skilled in the art at the time of the invention to utilize these expedients in the process of Sachs et al. to optimize the process.

Determination of the specific sintering parameters (e.g. time and temperature) would have been well within the realm of routine experimentation to one having ordinary skill in the art at the time of the invention. These parameters would have obviously been selected to optimize the process conditions and/or the properties of the final product.

It is notoriously well known in the art to reshape dental elements such as crowns by (e.g. grinding) in order to optimize the fit of the crown in the patient. It would have been obvious to one skilled in the art at the time of the invention to reshape a dental element made by the process of Brodtkin et al. in order to optimize its fit in the patient.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brodtkin et al. (6,322,728) in view of Sachs et al. (5,204,055) as applied to claims 1-6,9-15,17,19 and 20 above, and further in view of Yamada et al. (5,641,434). Yamada et al. discloses that polyvinyl alcohol and acrylate binders are suitable for binding ceramic powders. It would have been obvious to one skilled in the art at the time of the invention to use these binders in the process of Brodtkin et al.

Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brodtkin et al. (6,322,728) in view of Sachs et al. (5,204,055) as applied to claims 1-6,9-15,17,19 and 20 above, and further in view of Ota et al. (4,705,762). Ota et al. discloses the use of particles less than 50nm in size for producing sintered bodies. Ota et al. discloses that particles of this size have great surface energy and can be sintered at low temperatures. It would have been obvious to one skilled in the art at the time of the invention to use particles of this size in the process of Brodtkin et al. to allow for sintering at low temperatures.

### ***Response to Arguments***

Applicant's arguments filed 6/22/04 have been fully considered but they are not persuasive. Applicant argues that the Brodtkin reference does not disclose a sintering step because example 2 of Brodtkin fails to disclose a sintering step. It is agreed that example 2 of the Brodtkin does not disclose a sintering step. However applicant is referred to Brodtkin Col 4, lines 4ff, as noted above, which teaches that after the layers have been deposited to achieve the desired shaped configuration it may be desirable that the form and configuration be heated or cured at a suitable selected temperature to further promote binding of the powder particles hence meeting the definition of sintering as noted in footnote 1. Sintering as noted in footnote 1 is to cause to form a coherent mass by heating without melting which is what Brodtkin describes as doing.

In response to applicant's arguments against the Sachs, Yamada and Ota references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re*

*Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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STEVEN P. GRIFFIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700